

# NETWORKING CISCO SYSTEMS

A student who has completed the Job Corps Networking Cisco Systems program is equipped with the skills to contribute to the workplace as a valued employee from day one. Competence in academic and vocational skills is required for graduation. In addition, Job Corps students learn employability and technological skills. To complete his or her Networking Cisco Systems training, a student must master skills in these categories:

## **SAFETY**

Describe basic electronic safety; explain how electrostatic discharge (ESD) can damage a computer; explain ESD prevention and proper grounding techniques.

## **COMPUTER ORIENTATION**

Identify job opportunities for networking; define common terms; identify parts of a computer; describe the different peripherals and system support drives; identify trouble shooting equipment; discuss general preventive maintenance: where to expect trouble, working environment and duty cycle.

## **NETWORKING BASICS**

Connect to the Internet; network math.

## **NETWORKING FUNDAMENTALS**

Networking terminology; digital bandwidth; networking models; networking media: copper, optical and wireless; frequency based cable testing: signals and noise; cabling the LAN; cabling the WAN.

## **NETWORKING MANAGEMENT**

Administrative side of network management; network documentation; networking security; monitoring the network; environmental factors; network performance; sever administration; network troubleshooting.

## **ETHERNET FUNDAMENTALS**

Ethernet operations; Ethernet technologies: 10-Mbps Ethernet, Gigabit and 10-gigabit Ethernet; Ethernet switching; collision domains and broadcast domains.

## **TCP/IP PROTOCOL SUITE AND IP ADDRESSING**

Understanding the TCP/IP protocol suite; Internet addresses; obtaining an IP address; Internet protocol (routed); IP routing protocols; mechanics of IP addressing and subnetting; TCP/IP transport layer; TCP/IP application layer; the role of DNS in router configuration; verifying address configurations; assigning new subnet numbers to the topology.

## **ROUTERS**

Routing basics; why routing protocols are necessary; distance-vectors routing; link-state routing; the context of different routing protocols; WANs; WANs and routers; router user interface; router user interface and interface modes; router components; router show commands; router network neighbors; basic network testing; troubleshooting tools; router boot sequence and setup mode; system configuration dialogue; router setup challenge; router configuration files; router configuration modes; configuration method; configuring a router from the CLI after start-up configuration has been erased.

## **ROUTING PROTOCOLS: IGRP**

The network layer basics; routed and routing protocols; IP routing protocols; IGRP operation.

## **IOS VERSIONS**

The basics of IOS versions; bootstrap options in software; IOS naming and software image backup.

**OSI REFERENCE MODEL AND ROUTING**

The problems it solves; the physical layer of the OSI reference model; the data link layer of the OSI model; network layer functions; routing and the different classes of routing protocols; the transport layer of the OSI reference model.

**LAN SWITCHING, LAN DESIGN AND VLANS**

Various LAN communication problems; full-duplex transmitting, fast Ethernet standard and LAN segmentation; LAN design goals and components; network design and methodology; layer 1-3 design; switching and VLANs; the spanning-tree protocol; VLANs; segmentation with switching architectures; VLAN implementation; benefits of VLANs.

**ACLS**

Access control lists (ACLs) configuration tasks; standard, extended and named ACLs; using ACLs with protocols; placing and verifying ACLs.

**NOVELL IPX**

Cisco routers in netware networks; Novell encapsulation; Novell routing; Novell IPX configuration; monitoring and managing an IPX network.

**WANS AND WAN DESIGN**

WAN technology and devices; how WANs relate to the OSI model; WAN encapsulation formulae; WAN link operations; WAN communication; the first steps in WAN design; how to identify and select networking capabilities.

**POINT-TO-POINT PROTOCOL (PPP) AND INTEGRATED SERVICES DIGITAL NETWORK (ISDN)**

PPP session establishment and authentication; How ISDN relates to OSI reference model: ISDN uses; ISDN services: BRI and PRI; ISDN configuration tasks; dial-on-demand routing.

**FRAME RELAY**

Frame relay technology; LMI: Cisco's implementation of frame relay; LMI features; frame relay subinterfaces; the configuration of basic frame relay.